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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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DISEASES of the NERVOUS SYSTEM

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A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

*Modern Reorientations in Psychoanalytic Therapy**

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During recent years many psychoanalysts have begun to advocate sweeping revisions in analytic theory and technique to conform more closely with the ultimate objectives of all psychotherapy: namely, the rapid, effective and lasting relief of personal distress and social maladaptations. Parenthetic apologies for such deviations from "traditional" psychoanalytic practice are still occasionally offered but, in truth were never considered necessary by the founders of analysis. Certainly, Freud himself and the more thoughtful of his disciples (e.g., Jung, Steckel, Ferenczi, Adler, Rank and others) continually expanded, modified and reformulated the tenets of psychoanalysis as new data and new insights emerged, since they realized that without such progress psychoanalytic dogma would soon become as outdated as Pythagorean mathematics, Aristotelian logic or Galenic medicine.

In brief review, the rationale of psychoanalytic therapy evolved as follows. Freud, under the influence of Charcot and Bernheim, and much impressed with Breuer's[1] observations in the case of the hysterical girl Anna O, at first employed hypnotism for both therapy and research; i.e., to release pent-up emotional tensions in the therapeutic situation and to disclose memories of relatively recent traumatic events in the patient's experience.[2,3] Freud's analytic genius, however, enabled him to discern certain psychological principles that had remained hidden from his predecessors.[4] He saw, for instance, that the genesis of the patient's neurosis lay not in the recent events themselves, but in the fact that these re-evoked and resonated with deep-lying sexual or destructive impulses which, because of their connotations of personal danger, had to be repressed from consciousness and deviated into neurotic symptoms.

Moreover, Freud began to trace these conflicts between "unconscious" desires and fears to the formative years of the patient's childhood. In this connection he began to understand the process of hypnosis itself not in the mystical terms of Mesmer or according to the neurologic formulations of Charcot, but as a re-enactment by the patient of an avidly passive-dependent attitude on the hypnotist whom the patient thereby conceived as an omniscient and omnipotent parent-surrogate. Having thus contributed greatly and lastingly to analytic theory (let us not say "basically" since the "axioms" of one age become merely the special instances of another) Freud modified the technique of his therapy from hypnosis to permissive associations (miscalled "free") and the interpretation of dream and other symbolisms. Concurrently, Freud[5] changed the therapeutic objectives of analysis from the mere alteration of symptoms by so-called "emotional catharsis" to a far deeper exploration of the patient's characteristic behavior patterns as revealed in the analytic material and re-

*From the Department of Nervous and Mental Diseases and the National Foundation for Psychiatric Research, Northwestern University, Chicago. Read before the Chicago Psychoanalytic Society, January 25th, 1949.

capitulated in the varying interpersonal ("transference") relationships of the patient to the analyst.

Thus emerged the concept of the "psychoanalysis of the total personality"[6] which implies that in an intensive, prolonged and detailed process of symbolic clarification, acting out and working through, the patient becomes conscious of his own previously hidden desires and fears and their varying expressions in his past and current conduct. Equipped with clearer knowledge enhanced by reorientative experiences in his analysis, the patient frees himself from the false generalizations derived from childhood misconceptions and can then utilize his adult powers to achieve relatively well-adjusted, socially useful and culturally creative living. In two generations, then, the rationale of analytic therapy had progressed from a quasi-mystic reliance on hypnosis and evanescent catharsis to the broader concepts of experiential traumata, their roots in infantile sensitizations, their relationships to adult symbol-systems, psychosomatic reactions, character "traits" and other complex patterns of conduct. Therapy itself depended on the patient's motivational, affective and intellectual reorientations, first in the transference relationship and later in all personal and social living.

Modern analysts[7] contend justifiably first, that the rationale of psychoanalysis need not remain fixated, so to speak, at any phase of this evolution; second, that we can now, with accumulated knowledge and skill, employ greater directness and versatility in treating our patients; and third, that, as scientists as well as practitioners, we should remain alert and receptive with regard to valid developments in both theory and technique. Let us review the sources from which such progress may arise.

In a recent paper on this subject, Dr. Franz Alexander[8] points out that until recently "our primary sources of psychoanalytic knowledge [have been] the observations made during the therapeutic procedure." In the history of psychoanalysis this is of course true, as it is also true that Leeuwenhoek in 1670-80 derived much of his theory of microscopy from the observation of minute organisms in drops of pond water. But just as Leeuwenhoek soon extended his techniques to human tissues and other relevant fields of biological research (and as Freud comparably utilized analytic concepts for the study of myths, of asthetics, politics and religion and thus derived further insights) analysts may also turn their research tools to the scientific investigation of other forms of psychotherapy which, by virtue of their empiric efficacy, have survived through the ages.

For instance, should we not try to understand and perhaps utilize more scientifically the therapeutic dynamics of religious conversion and of other quasi-mystical experiences as employed by priests, faith healers and others who have intuitively sensed perhaps the deepest of human yearnings—those for complete dependence on some omnipotent but compassionate power? And would it not also be advantageous to re-examine, in the light of analytic knowledge, the various psychologic "mechanisms" of suggestion, persuasion, exhortation, the confessional, hypnosis, semantic re-education, esthetic expression, psychodrama, group therapy and other individual and social techniques employed with such empirical confidence and demonstrable (even if partial) success by various practitioners? And for that matter, how about the psychologic concommittants of physical rest, hydrotherapeutics, music, calisthenics, the influence of hormones and enzymes, the psychopharmacology of alcohol, barbiturates and other drugs,* and even the psychologic alterations resulting from the various forms of shock therapy and lobotomy?

Is it profitable to argue, as some analysts do, that a dynamic understanding of these procedures is outside the field of psychoanalysis—a specialty which purports to be the deepest study of the determinants, vicissitudes and corrective therapy of human behavior? And can it be contended that a

*For example: a markedly asthenic 26-year old nurse referred to me for analytic therapy gave a history of several months of severe benzedrine addiction leading to the development of hallucinations of voices accusing her of sexual irregularities. She had been treated by electroshock which "removed" the voices, but left her, as she expressed it, "so lonesome for them" that she resumed her intake of toxic doses of benzedrine until the hallucinations recurred. Detailed psychoanalytic investigations indicated that the benzedrine and electroshock had markedly influenced her behavior in ways that could not be understood in purely symbolic terms; instead, therapy had to be founded as well on a multiplicity of neurologic and pharmacologic factors.

more scientific application of what is valid in these techniques would sully or stultify our "accepted" psychoanalytic practice? On the contrary, I venture to suggest that it would benefit analysts and their psychiatric colleagues mutually if a much more effective clinical and research liaison were established among all fields of psychiatry and its ancillary disciplines.

Recent analytic literature illustrates another progressive trend: namely, clarity of expression without recourse to an obscure and often neologistic lexicon. Granted that each new science is entitled to a specialized vocabulary to cover new facts and concepts, it must also be recognized that in the dialectic development of every science many of its terms become so variable, diffuse and controversial in meaning that they lose their usefulness for precise exposition. Thereafter each writer in the field can no longer be understood by the terms he uses but only by what each reader presumes is meant by those terms. Under these circumstances it is necessary for all concerned to agree anew on definitions; or failing that (and it usually fails), it is wise to return to a direct exposition of the phenomena or processes under consideration.

This Rado,[9] Kubie,[10] Alexander,[11] Kardiner,[12] and others have done for much of analytic theory; however, many conceptual areas remain in need of clarification. The latter is particularly true with reference to the presumed mechanisms of affect, as illustrated in the cavalier use by many analysts of the apparently non-technical but actually involved term *"emotion"* in various key phrases such as "emotional discharge," "corrective emotional experience," and so on. At first sight this may seem to be merely a semantic quibble, yet I wonder if any two analysts refer even approximately to the same configuration of processes by the term "emotion," let alone when the term is employed too glibly in various combinations such as "unconscious emotionality," "emotional learning," "emotional as opposed to intellectual insight," and in other phrases with similarly complex connotations.

I was recently assigned the task of writing a condensed biologic and psychologic analysis of the various meanings of the term emotion, and after 50 pages devoted to summarizing some 200 of the most important references I was forced to conclude that physiologists, neurologists, psychologists, psychoanalysts and/or philosophers differ widely with each other and among themselves as to precisely what if anything they mean by the word.[13] Even the same analyst may often refer to quite different phenomena in his uses of the term. For instance, Alexander[11] sometimes uses emotion to mean kinesthetic feelings or kinesthetic experiences; sometimes to denote simple, complex or conflictful motivations; sometimes the release of these motivations or, conversely, their frustration; sometimes as an expression of interpersonal attitudes; and sometimes to signify a flash of vivid learning in the Gestalt sense of insight. Even more comprehensively, he uses the phrase "corrective emotional experience" to encompass variously deep and lasting instinctual, affective or intellectual reorientations, with or without verbalizations and with reference not only to the patient's transference status in the limited analytic situation, but also to all of his relationships in a reconceived and re-evaluated material and social universe.

Few psychologic purists would advocate the abolition of the term emotion—although some psychoanalysts have themselves noted how much more circumspect their thinking becomes when they ration its use—nevertheless, it is best to specify which of its multiple meanings is being employed in a given context. And the same considerations apply to other analytic terms of similarly variable and protean meanings such as "ego-function," "transference," and "insight." With regard to the last it in itself may be a "corrective emotional experience" to realize that too often we consider a patient to have "good insight" whenever his opinions about himself currently happen to coincide with our own—however mistaken we may afterward prove to be.

Briefer critical comments may be made with reference to other emergent trends in recent analytic literature. For instance, Wolberg[14] in advocating the revival of "hypnoanalysis," writes (p. 163), "Hypnosis has a remarkable influence on those resistances that are related to repression of traumatic memories and experiences." In this connection perhaps a more dynamic formulation would point out that in the permissive pas-

sive-dependent state called hypnosis the patient, in a wishfully regressive transference relationship, feels freer to produce material that will mitigate his own anxieties and concurrently please the hypnotist. As Bernheim observed empirically and Freud analytically (and this may apply equally to supposed "infantile memories," evoked by conscious "free association"), much of the material so produced really consists of retrospectively falsified ("screen") memories and transference fantasies rather than anamnestic fact.

Similarly, Alexander[8] states that during the course of therapy the patient begins to compare his unconscious concepts of the introjected and punitive parent-image with the actually kindly and helpful analyst, and that this comparison somehow "forces" or "compels the patient gradually to change and to revise his neurotic patterns." Actually, we know that this re-orientative process cannot be understood in terms of compulsion; instead, by symbolic and actual re-explorations accompanied by ("cathected with") progressively lessening anxiety, the patient gradually learns that old defenses are unnecessary and cherished misconceptions and neurotic devices no longer profitable.

Concurrently, and equally important from the standpoint of therapy, the patient also perceives that newer and more socially adapted behavior patterns bring greater measures of internal and external reward—both in the analytic situation and, *mirabile dictu,* in all of life. Once such reorientations are achieved—whether or not they are verbalized and formulated in mere "consciousness"—the therapeutic process is well on its way and the patient, without undue pressure, will emancipate himself from the transference neurosis which is no longer necessary to him. In fact, the technical devices of rationed hours and set termination advocated by Alexander will not need to be employed one-sidedly, since patient and analyst should be capable of deeper understanding and cooperation in the terminal phases of their therapeutic relationships.

But the general question then arises: have not these principles of psychotherapy been applied under various guises for ages, and are they not now being used effectively by many dynamically orientated psychiatrists? The answer is yes, with the important addendum that psychoanalytic knowledge has in part converted the rough empiricism derived from experience alone to the finely calculated techniques of more precise psychological understanding. Students of psychoanalysis have all experienced the satisfaction during and after their analytic training not only of learning how to conduct so-called traditional psychoanalyses, but of sharpening their skills and improving their results with every form of dynamic psychotherapy, utilizing to the fullest all available medical, familial and social resources.[15] A single case in point may be illustrative:

A 31-year-old married woman was recently referred for an increasingly severe obsessive-compulsive neurosis of many years duration, complicated by episodes of disabling anxiety and depression. Indeed, in the year before her consultation her behavior had become characterized by phobias and rituals of such intensity that she could not venture out of the house unattended or without elaborate precautions for emergency care of expected panic or syncope. The usual psychoanalytic procedures requiring months or years of intensive therapy were obviously impractical; instead in the maximum available time of bi-weekly interviews for 6 weeks condensed methods were employed directed toward conscious recall of anxiety-provoking situations, intensive symbol and dream analysis, interpretations of intercurrent psychosomatic reactions, and contingent transference manipulations and resolutions. Her therapy cannot be reported here in greater detail, but perhaps it is worth noting that by the fourth interview this patient was making the 90-mile trip to the office unattended and that after the eleventh session she declared herself almost free of symptoms, happy with her husband and children for the first time in her life, and newly productive in her work as a writer. She has since moved to a distant city (incidentally, she travelled by air-liner, the mere sound of which over her home was formerly intolerable) in answer to career opportunities for both herself and her husband, and writes that she continues to experience contentment and success. Psychiatrists and analysts may profitably pool and evaluate their experiences with such cases after an appropriate follow-up period of say, three to ten years.

One other topic in current analytic literature merits brief consideration: namely, the question of the adequate training of psychiatrists and psychoanalysts. It is evident that, as more progressive and intensive techniques of dynamically orientated therapy are evolved post-graduate students will require ever more careful selection for personality, aptitude and potential skill and even more thorough preliminary training in the fundamental data, theories, and techniques of neuropsychiatry. Only with this background, indeed, can he approach, assimilate and utilize later developments in the rationale and method of psychoanalyses. To use an analogy, every surgeon is trained in the fundamentals of anatomy, physiology, pathology, and surgical principles and procedure so that, on completion of his work, he is presumably capable of coping with almost any surgical problem that comes to his care. A surgeon so trained, however, will not insist that every patient that comes to him can be treated only by a major exploratory operation; on the contrary he will use the most efficient procedures—major or minor medical, incisive or manipulative—that his knowledge and his skill dictate as best suited for the individual case. Correspondingly every analyst—and, ideally, every therapist—should undergo a most thorough personal preparation and years of well-supervised training: then, however, he can employ his insights and skills not only in traditional analytic techniques but also with the scientifically valid and efficient modifications required by each patient.

REFERENCES

1 Breuer, J. and Freud, S.: "Studies in Hysteria," *Nervous and Mental Disease Pub. Co.*, N. Y., 1936. (First German edition, Deutsche, Leipzig, 1895).
2 Freud, S.: "The Interpretation of Dreams," *The Macmillan Co.*, N. Y., 1913.
3 Puner, Helen W.: "Freud: His Life and His Mind," *Howell, Soskin*, N. Y., 1947.
4 Freud, S.: "The Origin and Development of Psychoanalysis," *Am. J. Psychol.*, 21:2, 1910.
5 Freud, S.: "New Introductory Lectures on Psychoanalysis," *W. W. Norton and Co.*, N. Y., 1936.
6 Alexander, F.: "Psychoanalysis of the Total Personality," *Nerv. and Ment. Dis. Mon.*, N. Y., No. 52, 1930.
7 Alexander, F., French, T. M., et. al.: "Psychoanalytic Therapy: Principles and Application," *Ronald Press*, N. Y., 1946.
8 Alexander, F.: "Analysis of the Therapeutic Factors in Psychoanalytic Treatment," *Personal communication*, to be published.
9 Rado, S.: "A Critical Examination of the Concept of Bisexuality," *Psychosom. Med.*, 2:459, 1940.
10 Kubie, L. S.: "Critical Analysis of the Concept of a Repetition Compulsion," *Internal. J. Psychoan.*, 20:390, 1939.
11 Alexander, F.: "Fundamentals of Psychoanalysis," *W. W. Norton and Co.*, N. Y., 1948.
12 Kardiner, A.: "The Traumatic Neuroses of War," *Psychosom. Med. Monogr.* II-III, Washington. National Research Council, 1941.
13 Masserman, J. H.: "A Psychoanalytic-Biodynamic Approach to the Problems of Feeling and Emotion," Mooseheart. *Second International Conference on Feelings and Emotions*, 1948.
14 Wolberg, L. R.: "Hypnoanalysis," *Grune and Stratton*, N. Y., 1945.
15 Masserman, J. H.: "Principles of Dynamic Psychiatry," *W. B. Saunders Co.*, Phila., 1946.

*Subshock Insulin Therapy in the Neuropsychiatric Section of a General Hospital**

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The use of insulin in treating psychiatric disorders is not new. As early as 1923 it was noted that insulin improved the mental status of diabetics who showed symptoms of depression.[1] Sakel in 1935 introduced insulin shock therapy for psychiatric disorders, using insulin in coma dosage. Then for several years enthusiasm for the treatment increased, but after wide-spread usage this enthusiasm waned. However, deep insulin shock is still being used with success in certain types of schizophrenia. In 1940 a report of Polatin, Spotnitz and Wiesel[3] advanced the idea of using insulin in large enough dosage to produce hypoglycaemia but not large enough to cause shock or coma. In August, 1941 Sargant and Craske[4] published a paper on the use of insulin therapy in war neuroses. They reported the treatment of 82 cases with subshock insulin, describing rapid gains in

*From the Medical College of Virginia Hospital.

weight, improved appetite and improvement in anxiety symptoms. Since their work was reported, there have been a number of publications appearing in the literature dealing with sub-shock insulin in the treatment of so-called "War Neuroses." Hohman and Kline[5] in October, 1946 reported 37 cases with anxiety states, depression, and psychosomatic disturbances successfully treated with 30 to 60 units of insulin daily. Kelly and Thompson[6] in 1947, under the title "Insulin as an Adjuvant in the Treatment of Anxiety States" discussed their experience during the last World War in the "neuroses hospitals" of the European Theater. They report having personally seen more than 15,000 patients treated by their modification of Sargant's method of using modified insulin therapy. In January of this year, in the Canadian Medical Association Journal,[2] Carnat, Edwards and Fletcher reported 197 cases treated with modified insulin therapy, most of which were cases of anxiety state, in which 60 per cent showed definite improvement.

Although we have found that insulin in sub-shock dosage is of greatest benefit in anxiety states, we have used it in a number of other conditions as well. In the series of cases here discussed it has been used in conjunction with electric shock in selective cases of dementia praecox and also in some cases of involutional melancholia, but in the psychoneurotics electric shock was used with the insulin in only a few cases.

Before any patient is given insulin for subcoma therapy there are certain procedures that must be carried out such as thorough physical examination, laboratory studies including complete blood count, urinalysis, blood sugar and blood bromide and obtaining written permission of the closest relative. In the insulin therapy room there should be 50 per cent dextrose for intravenous administration, stimulants (coramine, pituitrin, caffeine sodio-benzoate and adrenalin), one-tenth normal sodium chloride, and sugar solution containing 200 grams of sugar per 200 cubic centimeters orange juice. These are all necessary for insurance of the patient's safety during the therapeutic procedure.

Sub-shock reaction is produced by hypodermic injection of regular "U-40" or "U-80" insulin, the dosage varying from 20 units to 200 or more. The patient is usually started on 20 to 30 units a day and the dosage is increased by 20 to 30 units daily until sub-shock reaction occurs, the response and amount varying with the patient. This is given at 7:00 a. m. six days each week. We have not employed intravenous insulin.

When the dosage of insulin reaches a high level without producing the desired effect, often by reducing the dosage the next day by 50 units and on the following day again increasing the amount 50 units the desired reaction is produced.

Once the sub-shock level is reached, the same dosage is repeated daily until maximum improvement is attained, at which time the dosage is reduced gradually 20 to 50 units a day rather than terminating the course of treatment abruptly.

Nursing care is of utmost importance during insulin sub-shock therapy. The duty of the nurse is to keep the room as quiet as possible. She should never leave the patient alone after the onset of symptoms, which occurs usually 20 to 30 minutes after the intramuscular injection of insulin. During the first hour the patient is usually quiet and drowsy but during the second and third hours the symptoms vary according to the amount of insulin administered and the *individual* reaction to the medication. The nurse should watch for flushing of the face, profuse perspiration, salivation, hunger, slurred speech, confusion, apprehensive restlessness, and a panicky demand for food. The patient's pulse and respiration are checked every fifteen minutes. Any marked variations such as respiratory difficulty, cyanosis, pallor, strabismus, nystagmus, fibrillary muscular twitching or convulsions are reported to the doctor in charge of the insulin room. Patients are watched closely for excessive salivation and should be turned on the side to prevent collection of mucous in the throat.

The insulin sub-shock is terminated at the end of the second hour unless untoward reaction occurs and it is deemed advisable to end the treatment earlier. If the patient is able to swallow, 400 cubic centimeters of orange juice containing 400 grams of sugar are administered. If the patient cannot be aroused enough to drink the orange juice, 30 to 50 cubic centimeters of 50 per cent glucose are given intravenously. When the patient responds enough to take the orange juice

orally, the 400 cubic centimeters are given. Shortly after termination of the treatment the patient is served breakfast. It is essential that he receive ample diet to prevent a delayed insulin reaction. A patient who has emerged from sub-shock after administration of glucose and other forms of sugar may suddenly relapse into unconsciousness or portray symptoms of sub-shock within a 24 hour period. All patients receiving insulin therapy who are permitted to go out of the hospital during the day are instructed to take some form of sugar such as a bar of candy with them, and are instructed to return to the hospital immediately if symptoms of weakness occur. For replenishment of the body's salt content lost through perspiration during therapy, sodium chloride tablets are given.

Although the mode of action of insulin on the nervous system is not definitely known, it is thought that induced hypoglycaemia is antispasmotic and antagonistic to the sympathetic activity. Hohman and Kline[5] have advanced the theory that "The production of hypoglycaemia by sub-shock doses of insulin stimulates the sympathetico - adrenal mechanism at the hypothalamic level, thus restoring autonomic balance, reestablishing homeostasis and probably influencing the cortex by way of the hypothalmus." Whether this is the explanation or not is not yet proven. However, insulin certainly does help to relieve the physiological features in anxiety states. We believe that there is a definite psychotherapeutic effect resulting from the fact that the patient is on a definite regime which causes physiological responses that are tangible and immediately recognized by the patient. The gain in weight which is usually accompanied by a feeling of physical well being helps to make him more amenable to psychotherapy. Of course the personality make-up is not changed in insulin and any good results obtained are not permanent unless the patient is made aware of the underlying cause of his symptoms and unless he gains insight or understanding of the basic factors in the etiology. In other words, insulin sub-shock cannot in any way replace good sound practical psychotherapy. If, however, it does help to bring the patient to a point where he is more amenable to the psychotherapeutic approach, it serves its purpose. As is well known, many patients are very resistant to all forms of psychotherapy and any treatment which helps to break down this resistance serves to promote cooperation and helps to establish the necessary rapport.

Under the above-mentioned routine, complications are exceedingly rare. Occasionally a patient may lapse into a coma but with careful watching this can usually be avoided. When it does occur the treatment is terminated readily, if the signs of impending coma are noted while the patient is able to take glucose solution orally. If coma actually develops, glucose intravenously or by means of a nasal tube rouses the patient in a few minutes to the point where he can take the solution by mouth. Only rarely does a patient develop a convulsion during the course of sub-shock insulin therapy. This is usually prevented by terminating the treatment at the first sign of muscular twitching. Not infrequently a delayed insulin reaction may occur several hours after termination of treatment, which, even when very slight, gives the patient a great deal of concern.

It is evident that in sub-shock insulin we do not have a cure-all for all psychoneuroses nor for all tension states. A careful selection of cases is necessary. Family history, previous personality, intelligence, physical status, duration of illness, and so-called constitutional psychopathic factors all must be considered. It is not suitable for the hyperacute anxiety state which is best first treated with one of the other sedative measures at our disposal.[7] Nor is it suited for some of the chronic long standing psychoneuroses which do often manifest a limited degree of anxiety which is not a prominent factor in the illness. We fully realize that a series of 58 cases is too limited in number to be of any statistical value. However, a brief discussion of these cases from the statistical standpoint will serve to show the type of case which we have found to have been benefited most by this form of therapy. In the group with the diagnosis, psychoneurosis, anxiety state there were 35 females and 23 males. The lowest age was 21 years and the highest 51, the average age being 34. The highest dosage of insulin given was 375 units, and the lowest amount found to produce the desired reaction was 30 units. The average patient required a daily dosage of 150 units before reaching

the desired sub-shock state. One patient received only four treatments and was in the hospital only nine days, whereas another received 50 treatments and was in the hospital 90 days. The average number of treatments were 22 and hospitalization 36 days. This corresponds roughly with the findings of Kelly and Thompson who reported that they found the optimum period of treatment to be approximately 21 days. In our group of 58 patients symptoms most commonly found were insomnia, anorexia, crying spells, anxiety, many and varied fears, obsessive ideas, apprehension, multiple somatic complaints, (from headaches to painful feet), centering mostly in the chest and abdomen; weakness (generalized and localized); fatigue; feelings of insecurity; tremulousness; nightmares; impotency; frigidity; "confusion"; agitation, and the rather common complaint of "nervousness."

Of these 58 cases, 15 were considered as having recovered and 37 others were much improved. The remaining six were only slightly improved or unimproved. In addition to the 58 cases of anxiety state, there were 41 other cases of psychoneurosis, seven of which were diagnosed reactive depression; nine conversion hysteria; five hypochondriasis; three psychasthenia and seventeen mixed type. Of the 41 cases, sixteen were considered social recoveries, nineteen more were improved and six were unimproved.

Insulin was used in a few cases of involutional melancholia when electric shock was contra-indicated and in a few cases which had not improved or had relapsed after a course of electric shock at some other hospital. Of the ten cases of involutional melancholia treated, six made a social recovery, two improved and two were unimproved.

Sub-shock insulin was used also in conjunction with electric shock in 26 cases of dementia praecox, fourteen of which were of the paranoid type; two were catatonic; two hebephrenic; three, mixed type and five, type unclassified. Of these 26, ten were considered social recoveries and ten were improved, leaving six unimproved.

In this latter group of course the treatments were continued for much longer periods than in the psychoneurotics. For the purpose of emphasis we must again call attention to the fact that the sub-shock insulin treatment was only a part of the total treatment. In addition to repeated psychotherapeutic interviews, other therapeutic procedures were employed.

Summary

1) Sub-shock insulin therapy has been discussed from the standpoint of indications, technique, and mode of action.

2) A series of 136 cases which have been treated in the Neuropsychiatric section of a general hospital by using this method as an adjunct to other forms of therapy has been presented.

3) Results suggest that sub-shock insulin therapy alleviates tension symptoms, shortens the period of hospitalization, and renders the patient more susceptible to psychotherapy.

REFERENCES

1 Kraines, S. H.: "The Therapy of Neuroses and Psychoses," *Lea and Febiger,* Philadelphia, 1941.

2 Carnat, M., Edwards, F. J. and Fletcher, E. F.: *Canadian Med. Ass. J.,* 58:22, 1948.

3 Polatin, P., Spatnitz, H. and Wiesel, B.: *N. Y. State J. Med.,* 40:843, 1940.

4 Sargant, W. and Craske, N.: "Modified Insulin in War Neuroses," *Lancet,* 2:212-214, 1941.

5 Hohman, L. B. and Kline, C. L.: "Sub-shock Insulin Therapy in Anxiety States and Anxiety Depression," *Dis. Nerv. Syst.,* 7:293-298, 1946.

6 Kelly, D. McG and Thompson, L. J.: "Insulin as an Adjuvant in the Treatment of Anxiety States," *North Carolina Med. J.,* 8:762-767.

7 Sargant, W. and Slater, E.: "Introduction to Somatic Methods of Treatment in Psychiatry," *The Williams and Wilkins Co.,* Baltimore, 1944.

Hypothermia

(A NEW TREATMENT OF PSYCHIATRIC DISORDERS)

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Introduction

Hypothermia applied to mentally ill patients, securing their recovery from pathologic emotional symptoms, has come to be used during recent years in an organized fashion by a limited number of researchers. Some have failed to obtain any favorable results, but others are very pleased with this therapy.

Though this kind of treatment has been known for centuries as a medical therapeutic measure, its use as a psychiatric weapon originated with the investigations carried on by Fay and co-workers[1,2] on persons suffering under a distressing carcinomatous state or under the influence of drug addiction. This group thought they had obtained successful cures in this field and since 1938 have reported their conclusions in numerous papers.

These findings encouraged a few others to experiment with these procedures on psychotics and in April 1941, Talbot and Tillotson[3,4] published their initial report on their research. The physiological changes observed during the treatment were exposed thoroughly to ante- and post-treatment tests. Patients were subjected to temperatures ranging from 74 degrees to 92 degrees F. for 24 to 68 hours. Four of ten schizophrenics treated showed changes in the clinical course. All of these were under 30 years of age and had been mentally sick for a relatively short time. Of the others, three were between 30 and 45 years of age and experienced a transient period of improvement; two had been ill for more than ten years and exhibited no improvement; one patient died from cardiovascular failure during treatment. These authors made the significant observation that mute, aggressive, combative, and uncooperative patients suffering from schizophrenia may enjoy periods of mental clarity. It suggests that during the early years of schizophrenia irreparable morphologic damage to the central nervous system does not occur. If the clinical course can be altered during these important years, then there may be a modicum of hope in the treatment of an essentially incurable malady. Other writers dealt with the subject years before.[5,6,7]

Goldman and Murray,[8] reporting on sixteen cases (schizophrenia, manic depressive, and involutional) in February 1943, noted painstakingly the bio-physiological alteration in the patients submitted to lower temperatures and they concluded that this procedure was not worthwhile in treating mentally ill individuals.

The above are the most important efforts undertaken in this country in regard to hypothermia in mental diseases. However, the most complete investigations in the bio-physiological field were carried on by German researchers who, during the last World War, inhumanly exposed prisoners in the Dachau concentration camp to temperatures low enough to produce the death of hundreds of victims. These iniquitous attempts were inspired by the perverted mind of Heinrich Himmler, who boasted about his accomplishments and organized the experiment on a vast scale with the faithful cooperation of S. Rasher, and other German physicians. An accurate account of these events was provided by Leo Alexander[9] when he returned from his visit to Europe.

Experimental subjects were submerged in cold water, wearing various uniforms; one group wore flying equipment, including a rubber or kapok life-jacket, others wore additional protective clothing. In still another group the subjects were naked. The physiological functions were tested in detail before, during, and after the experiment. They concluded that death from exposure to cold water in man is primarily due to heart failure, the main causes of this damage to the heart are:

1) The marked increase in the viscosity of the blood causes an over-load on the heart.
2) The throttling of peripheral vascular districts due to the marked vasoconstriction causes an

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overloading of proximal districts. In autopsies performed on their own experimental subjects, as well as reports on cases described in the literature of people who died following shipwreck at sea, marked overfilling of the right heart has been uniformly found.

3) It is to be assumed that under influence of the lowering of blood temperatures, the heart muscle itself becomes hypodynamic. In animal experiments other authors have shown that by overloading and cooling of the isolated heart, auricular fibrillation could be produced. Changes in capillary permeability were likewise considered by the authors as additional damaging factors, especially in combination with the increased viscosity.

Several physical therapeutic measures were tested in order to rewarm the chilled subject. The poorest results were obtained by packing the victims in warm blankets; the best results in speeding up rewarming and diminishing the afterdrop were obtained by a hot bath at 122 degrees F. Animal rewarming was found to be of a great utility also.

Pharmacologic agents were employed. Cardiac and circulatory stimulants; such as, strophantine, metrazol, coramine, and lobeline were found to have no effect on the disturbances produced by intense chilling. In fatal cases even intracardial injection of strophantine (0.25 mg.) did not delay further deterioration of the heart action, and in one case even seemed to have accelerated it. The Germans' findings in this respect were seen as a confirmation of the studies of Jarish, who found that strophantine, metrazol, and coramine were toxic in animals suffering from shock caused by exposure to cold.

Equipment

It wasn't until we were very well acquainted with all the preceding knowledge with regard to hypothermia that we started our investigations under the direction of Dr. John H. Taylor at this hospital. Though the patients were carefully examined from the physical standpoint and underwent extensive laboratory tests, our attention was directed to the mental aspect of the treatment rather than to physiological investigations.

Therefore, an unselected group of patients bearing the different types of emotional and intellectual disorders of the so-called functional psychoses were subjected to this treatment. We used in our Service the equipment furnished by the Therm - O - Rite Product Company consisting of

(a) The cabinet with a freezing and heating unit. By regulation of a thermostatic control, the temperature of the solution (equal parts of alcohol and water) can be regulated between 20 degrees F. and 100 degrees F. Attached to the tank holding the solution is a pump, which can be set at varying pressures to pump the solution through the blankets.

(b) A blanket containing a continuous coil of rubber tubing. We are also equipped with hoods for head applications. The solution is pumped through the blanket, usually at about 12 lbs. pressure and depending on the temperature set, either heats or cools the blankets. Usually before starting the treatment, the blankets are cooled to 30 degrees F. The temperature of the body can be controlled in one of two ways, either by turning the pump off and stopping the circulation of the fluid or by turning the thermostat up and elevating the temperature of the solution.

(c) The third and important part of the equipment is the micromax recording thermocouple which indicates the temperature of whatever part of the body it is applied to. One thermocouple is inserted rectally to give the body temperature and the other is attached to the dorsal surface of the foot directly distal to the toes to show the skin temperature. These are recorded, a continuous 24 hour record being made. If two patients are treated at the same time, a rectal thermometer is used for each patient.

Pre- and Post-Treatment Care

A patient, before being given this treatment in our Service, was subjected to certain precautionary measures. First of all, he had a complete physical examination and series of laboratory tests. He was permitted to have no food intake for several hours before the beginning of the treatment; therefore, the breakfast and noon meal would be eliminated. An enema is given at 11:00 A.M. of the treatment day. About one or two hours before the initiation of the anesthesia, the patient receives a hypodermic dose of morphine sulphate (grains ¼) and atropine sulphate (grains 1/150). At the beginning of the treatment, usually at 1:30 P.M., the patient is transported by stretcher to the Hypothermic Service. The cooling blankets have been previously prepared to receive the patient after he has been put under anesthesia by intravenous sodium penthotal. The dose of anesthetic depends upon individual characteristics and is administered by an expert in this field of medicine. When the patient is entirely anesthetized, he is placed between the two special cooling blankets and continuously receives the drug until the rectal temperature reaches the level of 93 degrees F. From then on the anesthetic property of the cold usually obviates the necessity for further intravenous anesthesia. However, the patient requires to be sedated from time to time, otherwise, he becomes restless, whining,

complaining of different sensations, and perhaps regaining consciousness, which may harm the effects of the procedure.

The entire body is under the direct influence of the cold temperature, with the exception of the head, which, according to the Germans' statements is of vital importance to preserve from low temperatures. Furthermore, measures are taken to avoid injury that may be produced by direct contact of the blankets with those parts of the body which endure the highest pressure in dorsal position; i.e., the buttocks which are protected by a rubber ring, the knees which are in direct and traumatic contact with the upper blanket, and the feet which are held in normal position by sand bags or other adequate means.

The skin and the rectal temperatures are recorded by the special thermocouples already described. These instruments are checked frequently to be assured that they are in proper position and that they are functioning, for any defect could be fatal to the subject. A nurse remains in constant attendance and a doctor is immediately available should his presence be required.

The patient is kept between the blankets for 48 to 72 hours. At times he is partially uncovered in order that the thermocouple may be observed; each morning he is uncovered completely in order to be washed. The temperature oscillates around a rectal temperature of 90 degrees F.; the oscillations vary from 86 degrees F. to 99 degrees F. It should be noted that the rewarming of the body is faster than its cooling. This temperature is controlled by the accurate measurement of the temperature in the special sheet recorders and by turning on and off the machine as soon as a temperature of 90 degrees F. is achieved. To avoid unnecessary uncovering of the body, the pulse is taken from the superficial temporal artery.

During the first day of treatment, patient does not receive any kind of nutritive substances. He is watched constantly and the attending nurse turns the machine on and off whenever the temperature is 90 degrees F. Temperature, pulse rate, and respiratory movements are recorded every half hour. Every two hours the entire body is checked. One drop of mineral oil in each eye and both nostrils is provided every four hours. The eyelids are kept covered with vaseline gauze. If the patient is restless, he may receive morphine sulphate (grains ¼) and hyoscine (grains 1/150) every six hours.

On subsequent days the same measures are continued but nutritive elements are furnished, the patient receiving two ounces of glucose (10 per cent solution) every hour, day and night, one tablet of thiamine chloride every eight hours, and one tablet of cevitamic acid every eight hours. The contents of the stomach are aspirated each evening. Gastric lavage with saline solution is done each morning. Patient has to be catheterized every twenty-four hours at 1 P. M. For restlessness patient may be given two drams of chloral hydrate every four or six hours. If the patient is very resistive, he may be given morphine sulphate (grains ¼) with hyoscine (grains 1/150) not less than every four hours.

When treatment is to be ended, the machine is turned off and patient remains under the blankets until he recovers his normal temperature. Afterward patient would present a slight rise in temperature that rapidly subsides as time elapses and no infectious complications supervene. On the first day off treatment patient may be given any food he wants. As a general rule, during this state patient only admits fluids. The second day his return to normal meals is complete.

In cases in which pathologic signs of vascular origin are seen in the lower extremities, these parts of the body are exposed to the action of an electric fan. Some of the patients complained of paresthesias of different kinds which, with the exception of our first case, disappeared in a short time.

Results

At the beginning of this brief exposition, it was pointed out that our interest was directed toward the determination of the value of hypothermia to cure the mentally ill. Therefore, it was decided to select the candidates for this treatment in an indiscriminate manner irrespective of the duration of the sickness, yet giving preference to the group included in the large classification of functional psychoses and involutional states. One patient exhibiting the characteristics of a mental deficiency with an episodic psychosis was deliberately selected.

Thirty patients were treated from November

1947, to March 1948, one being treated twice. Fifteen patients were released from the hospital in an improved condition and only one returned, this being her sixth admission. This improved group is comprised as follows:

(1) Eight manic depressive, manic.
(2) One manic depressive, depressed.
(3) Four schizophrenics:
    (a) Two hebephrenics,
    (b) One catatonic,
    (c) One paranoid.
(4) One involutional psychosis, depressed-agitated type.
(5) One psychosis with mental deficiency.

One patient in the group of manics showed remarkable improvement, and was discharged almost immediately after treatment. She is A. N., 28 years old, married, committed to the hospital on November 8, 1947, with a diagnosis of manic depressive psychosis, manic type with the following history: After her husband's return from service she could not adjust to his presence in the home. She became very nervous, overactive, and was unable to eat. She became very religious, but denied psychosensory disturbances, though very probably she was hallucinated. She had spells of depression during which she would cry and keep saying "I can't see the light." She exhibited marked flight of ideas and was very uncooperative at all times. Then she was submitted to hypothermia treatment on November 11, 1947, where she was kept for forty-eight hours. At the end of the treatment patient's symptoms subsided and a few days later she behaved in a normal manner. She was under close observation until she was released from the hospital on December 4, 1947. Patient is still at home, well adjusted to her social life.

Two other manics showed good improvement. One depressed patient suffering under the distress of a deep depression of the manic depressive type and one of the hebephrenics showed a great improvement. The other ten patients before being released from the hospital underwent other sorts of treatments (insulin, electroshock, and metrazol) but most of them had shown some improvement after the hypothermic treatment.

Conclusions

Considering that the number of improvements or cures obtained in our patients bears a low percentage to the total treatments, there may be many who are disappointed and will reject entirely this therapeutic measure. We recognize that it is too early to adopt any definite position in regard to hypothermia, it is yet in its infancy. Few persons have paid attention to it and only some of these have attempted its development. Although the equipment to produce low temperature is dependable, one still has to learn a great deal about individual physical reactions, profound body changes and means by which to avoid untoward reactions and obviate fatal outcomes.

One of the most difficult problems to be solved is to prolong the periods under the influence of the low temperature. Very rarely did we allow patients to go beyond 48 hours and never more than 72 hours, lest it provoke irreversible vascular alterations, principally in the lower extremities. We think that this complication is a serious obstacle and, if we are able to overcome it, the rate of cures will increase considerably. Furthermore, there are a multitude of other details to be solved.

This preliminary report of what has been accomplished is presented with the hope that it will stimulate interest in a new approach and a new procedure in dealing with the mentally ill. The effort required is small. Possibilities appear to be unlimited.

REFERENCES

1 Fay, T. and Henry, G. C.: "Correlation of Body Segmental Temperature and Its Relation to the Location of Carcinomatous Metastasis: Clinical Observation and Response to Methods of Regrigeration," *Surg., Gynec. and Obst.*, 66: 512-524, 1938.
2 Fay, T.: "Observations on Prolonged Human Refrigeration," *New York State M. J.*, 40:1351, 1940.
3 Talbot, John H. and Tillotson, Kenneth, J.: "The Effects of Cold on Mental Disorders," *Dis. Nerv. Syst.*, 2:4, (April) 1941.
4 Talbot, John H.: "The Physiologic and Therapeutic Effects of Hypothermia," *New England J. of Med.*, 224:281-288, 1941.
5 Cameron, D. E.: "Heat Production and Heat Control in the Schizophrenic Reaction," *Arch. Neur. and Psychiat.*, 32:704, 1934.
6 Gottlieb, J. S. and Linden, F. E.: "Body Temperature of Persons with Schizophrenia and of Normal Subjects. Effect of Changes in Environmental Temperature," *Arch. Neur. and Psychiat.*, 33:775, 1935.
7 Finkelman, I. and Stephens: "Heat Regulation in Dementia Praecox. Reaction of Patient with Dementia Praecox to Cold," *J. Neur. and Psychopath.*, 16:321, 1936.
8 Goldman, Douglas and Murray, Maynard: *J. of Nerv. and Ment. Dis.*, 97:2, (Feb.) 1943.
9 Alexander, Leo: "The Treatment of Shock from Prolonged Exposure to Cold, Especially in Water. (Combined Intelligence Objectives Sub-committee G-2 Division). (Restricted).

A Consideration of Human Ecology

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The constant preoccupation with detail and with the intricacies of the super structure of accumulated fact with which any scientific specialty is concerned tends to lead those associated with the field to neglect intermittent re-examinations of the underlying fundamentals which serve as premises upon which the theories of any science must be founded. The history of human culture reveals that from time to time vast complicated systems, that appeared to work fairly well, have been developed and for a period served as accepted doctrines. Such doctrines seem to fade in importance when a review demonstrates that the premises upon which they have grown do not actually support or justify the conclusions that have been assumed. It is not intended here to reveal that any popular contemporary doctrines actually rest upon shifting sands. It is my purpose rather to invite those interested in human behavior to review for a moment certain simple physical and biological phenomena which are familiar to all and which must, by their nature play a role in the premise upon which any concept of human behavior is built.

Man, in his struggle to understand himself and to find out why he, as an individual behaves and proceeds as he does, or why men in general tend to behave somewhat similarly in the presence of common stimuli, sees the emphasis vary and waiver between the environment in which he develops and the biologic entity which he is. This emphasis is so important that if one interests himself in the environment and its effects upon the individual he becomes known as an "environmentalist." On the other hand, if he gives attention to the innate tendencies inherent in the biologic entity itself, he finds himself being called an "organicist." Indeed, some persons who devote a considerable amount of their time to the study of personality choose to identify themselves with one or the other of the philosophies, or pseudo philosophies, indicated by these terms.

In order to resolve the controversy over the relative importance of the fundamental constitution and the environment, it appears necessary to observe the way in which the correlated activity of both operate to develop the individual personality of any given moment. The effort to understand human beings by the close observation of the mutual relationship between the organism and its environment should be known as the ecological approach.

Ecology is the science of the mutual relationship between an organism and its environment. Each living human being, like all other living organisms, is constantly in a state of ecological balance with his particular environment.

It is here proposed that the living human being and the medium in which he exists at any given moment are an interrelated whole the function of which is dependent upon the integration of its parts. In order to understand the whole, the parts must be defined and understood in their relationship to it. One must define the basic biologic constitution in terms of environment, and then define the environment in terms of the basic biologic constitution.

If we accept as a fact the general assumption that an individual's personality is effected, in its development, by the environment in which it develops, we must in turn accept the proposition that the original entity upon which the personality is built, and of which it is made, possesses, at its beginning, a capacity to be effected. Of what does this capacity to be effected consist?

Organisms in which we observe behavior have the ability to receive stimuli or to be stimulated. The very process of living is, in these organisms, dependent upon the possession of the ability to be stimulated, and in some way, to react to the stimulus. The stimulus can possibly come from only two sources. It may come from the matter which surrounds the organism, or it may come from

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within the organism itself. When the stimulus arises from within the organism it is simpler, for our purposes here, to consider the organism as a part of its own environment. Regardless of the state of the matter which surrounds an organism, or the behavior of it, it cannot be said to be a stimulus unless it, in some way, effects the organism.

Observation of organisms of different kinds reveals that each is effected by quite different properties in the surrounding matter. For a dog a certain high frequency sound wave serves as a simple stimulus and may be used as a signal by his master to whom the same sound wave is no stimulus at all. Among human beings one person may be stimulated by the presence of certain differences in the frequency of light waves and identify two or more frequencies as different colors. To another person the difference between certain of these light wave frequencies may be imperceptible due to his inherited lack of structural equipment to perceive them. Since he, therefore, differs from the majority of his kind in not having the capacity to be stimulated by certain colors we call him color blind. One person who possesses the structural capacity of identifying the minutest variations in sound wave frequencies, a gift commonly known as "absolute pitch," may indulge in raptures over the perfect execution of a symphony, while his tone-deaf friend upon whom all sound has the same effect will never understand what the excitement is about.

Snyder[1,2] established that only about three quarters of a large series of persons tested were able to taste a chemical substance known as phenyl-thio-carbomide and that to these persons it had a strong distinctive bitter taste. The remaining, approximately one quarter of those tested had no ability to taste this substance whatever although their general capacity for taste was good. By going further and examining the families of the non-tasters he showed that this taste deficiency follows the strict Mendelian principles of heredity. In other words some persons, by virtue of the inherited nature of their biologic structure have not the capacity to be stimulated by this particular element in their environment.

Whatever effect the environment may have upon the development of a personality can only be within the limits of the capacity to be effected which was present in the basic biological structure at the time of conception. To paraphrase the postulate of Kahn and Cohen[3] each individual has, from the moment of conception, his particular capacity to be influenced by and respond to his environment or, his "capacity to experience."

The primary component of the organism's capacity to be effected by its environment is the ability to be stimulated, and from observations sighted it is apparent that this ability varies from organism to organism even within the same species. It is further implied that, regardless of the many agencies that may effect it during growth and development, the presence or absence of any specific ability to be stimulated is determined by the genes in the organism's monocellular beginning.

Being stimulated in whatever ways its structure will allow cannot alone contribute to the development of the personality of an organism unless others of its inherent abilities are also brought into play. Something in the structure of the organism must from the beginning serve to assure continuity.

The quality of retaining the impression of a stimulus and using the retained data to determine the nature of the response to new stimuli is undoubtedly a conglomerate of many inate biologic capacities. Functionally, however, it is through this component of the basic capacity to be effected that a characteristic way of behaving develops and contributes to the nature of the total personality. If this capacity were not present in the basic structure of the organism, obviously personality development could never begin.

To understand environment in an ecological sense we may begin by examining the standard definitions. The Oxford English Dictionary offers two. In the first sense it is, "the objects, or the region surrounding anything." In the second it is, "the conditions under which any person or thing lives or is developed; the sum total of influences which modify and determine the development of life or character." Whichever of these one chooses, it becomes apparent upon close consideration that objects, regions or conditions cannot, by definition, be considered environment unless an organism or a thing in particular is present for them to surround and

influence. While the organism cannot exist free from environment, its environment as such is non-existent in the absence of the organism itself.

The organism maintains continuity as an entity because of structural characteristics determined by its genetic pattern. Its environment, on the other hand, depends upon two factors for any continuity it may have. The first of these factors is the activity of the organism in response to the stimuli the environment supplies. The second factor consists of a combination of all agencies that effect the behavior matter.

Before examining more closely the two factors which effect environment let us construct an ecological situation. For instance an adult human being is at a given moment surrounded by a total environment. Certain features of this environment such as cosmic rays, electronic waves, and sound frequencies above and below the human capacity for sound detection will not stimulate him because he simply does not possess the equipment necessary to be stimulated by them. Certain other elements in his total environmental sphere which he is equipped to be stimulated by may not at the moment be stimulating him because they are not within focus of the special sense or senses capable of receiving the stimulus. There may be a large stone behind him, but since it makes no sound, has no characteristic odor, is out of range of his vision and other sensory receptors, he is in no way stimulated by it. He may be constantly stimulated by other elements in his environment, but at the moment be unconscious of and in no way responding to the stimulus. For example, he may be wearing tight and uncomfortable shoes which are at all times giving stimulus to touch, pressure, and pain, receptors, but at the moment we are considering this person, his attention is consumed by matters related to other stimuli and he is not consciously aware of or unconsciously responding to other factors in his environment which are actually stimulating him. Finally there are those things or combinations of things in our person's environment of which he is at the moment aware and concerning which he may be consciously or unconsciously responding, acting, or planning action. The organism, that is, the person we are concerned with plus all of those elements in his environment which have in some way motivated him we will call an ecological situation. True, there are other elements in the person's environment by which he is capable of being stimulated, but since they are not at this moment concerned in his mutual relationship with the environment, they are not a part of the ecological situation.

The life of an organism may be conceived of, in the ecological sense, as a continuous flow from situation to situation, or as one continuous situation in a constant state of change. As the organism progresses in this manner it exercises a capacity to effect the direction and nature of the change and therefore to effect the situation of any moment. This action of the organism is concerned with the first of the two factors which contribute to the nature of environment; the activity of the organism in response to the stimuli the environment supplies. In the higher biological forms, particularly human beings, there is a broad area of selection of environmental factors. Every choice an individual makes has, in some way, to do with the selection of new environment and the production of change in the ecological situation. When in response to the stimuli inherent in the situation at one moment the individual selects environmental circumstances he wishes to bring about, he is motivated to activity designed or calculated to accomplish the environment desired. Whether or not the activity is, in any degree, successful in achieving its original purpose, new environment of some kind results. Any activity of an organism produces some change in its environment, even if it is nothing more than the exchange of gasses associated with respiration in the human being.

Since there are always more elements in the environment of any organism than have been either selected by it or induced by its purposeful activity, there are, from the ecological point of view, two kinds of environment. Let us for the purpose of reference give a name to each. Those environmental features which result from the directed, purposeful, activity of the organism we will call Induced Environment. Those parts of an organism's environment which are produced by any of the agencies which effect the behavior of matter, and have in no way been selected

or purposefully sought we will call Inevitable Environment. The location of ones birth, storms, social upheaval and epidemic fall in the latter category.

Any ecological situation will involve both kinds of environment. The moth which, attracted by light, applies its motility to the task of seeking the source has not selected or purposefully acted to gain the heat which burns its wings. The boy who induces the environmental surroundings of an attractive girl and a comfortable sofa will not consider that the little brother who hangs around is a product of his calculated activity. The inevitable aspects of any environment may be pleasant as well as unpleasant. If on going to a party he expects to be dull, a young man meets the girl of his dreams, he will find this bit of inevitable environment much to his liking. It is the prospect of pleasant inevitable environment that motivates the adventurer to induce environment he considers most likely to be associated with a certain type of inevitable environment.

Much of any human being's environment at a given moment is elected, selected, or induced by him. This induction of environment is performed by the individual through the application of, and within the limits of his inate biologic capacity to be stimulated, to be impressed by the stimuli, to interpret them in terms of previous experience, and being motivated and directed by the meanings thus derived, to act. His action is invariably designed to induce new features in his environment. He thereupon progresses to a changed ecological situation wherein he will be obliged to deal, not only with the new induced environmental features, but with inevitable features as well. Through the progress of this ecological sequence the individual develops upon the foundation of, and within the limits of his capacity to experience, *a way of experiencing*. It is through our observation of the individual's way of experiencing that we form impressions and draw conclusions about the nature of his personality. The only factors that are constant in the whole continuous ecological situation from conception to death are the basic capacities and limitations determined by the original germ plasm supplied by the genetic donors or parents.

We are constantly accumulating a vast stock pile of information about human behavior. Most of this is acquired through the observation of the end product of ecological activity and development. From it we have been able to evolve formulae which prove useful in giving assistance to certain human beings by resolving some of their ecological problems. From the position we occupy while applying these formulae to the task of alleviating human confusion and unhappiness the probability of ever explaining human behavior through the development of an exact science concerning it appears vastly remote. This impression of remoteness is probably due in part to the obvious lack of tools with which to build such a science. Rather than discouragement this fact should bring a reminder that the first task of science is to build its own tools. While those of us who devote our time to the problems associated with human behavior must use the knowledge and theory of the moment in the best interests of the human suffering of the moment; some of the time of all of us and all of the time of some of us should be directed toward the consideration and exploration of the basic, fundamental, physical phenomena associated with human ecology.

REFERENCES

1 Snyder, L. H.: "Inherited Taste Deficiency," *Science*, Aug. 7, 1931, Vol. 74, No. 1910.

2 Snyder, L. H.: "The Mutant Gene in Man," Genetics, Medicine and Man, *Cornell Press*, 1947.

3 Kahn, Eugen and Cohen, Louis H.: "The Way of Experiencing as a Psychiatric Concept," *Psychological Monographs*, 1936, Vol. XLVII, No. 212.

Psychoses with Multiple Sclerosis

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The multiple sclerosis syndrome has long been known to include psychiatric symptoms. Brown and Davis in 1922[1] found that 90 per cent of their cases showed some type of mental symptoms ranging from mild euphoria to severe schizophrenic-like reactions or organic deterioration. Mild euphoria is relatively common. Sugar and Nadell[2] found this symptom in 75 per cent of cases in a series that they reported. Borberg and Zahle[3] consider euphoria to be specific and pathognomonic of multiple sclerosis. Mild reactive depressive symptoms are also occasionally seen. Psychotic symptoms, however, are rare. Bohning, quoted in Cohen and Gavigan,[4] cites 14 cases in a series of 318 cases (4.4 per cent). Porterfield and Rupp[5] found two cases in 53 (3.6 per cent). The largest series found is 10 cases reported by Malone.[6] Other authors, without giving percentages, feel that a psychosis in multiple sclerosis is quite rare.

The etiology of the psychotic symptoms is unknown as is the etiology of multiple sclerosis generally. Theories advanced vary from purely organic to purely psychogenic. Cottrell and Wilson[7] believe that the symptoms are due to the invasion of cerebral mechanisms by a toxic agent. They reason that the thalamus or the cortex may be involved and that the periventricular involvement is even more common. Longworthy, Kolb and Androp[8] postulate that the psychoses are caused by plaques in the frontal lobes. Jelliffe,[9] in an analysis of a series of patients with multiple sclerosis, states that unconscious factors determine the location of the plaques which in turn cause the symptoms. Sugar and Nadell[2] assert that the clinical pictures resembling the functional psychoses are determined by the patient's premorbid personality pattern and develop in response to the disease through loss of inhibitory mechanisms either from organic or psychic processes. However, Arbuse[10] claims that the psychotic symptoms cannot be correlated with the pathological findings. At present, it is probably safest to say that the etiology of psychotic symptoms and their relationship to the pathological processes are unknown.

The psychotic reactions reported to occur with multiple sclerosis include organic deteriorative pictures, manic and depressive reactions and schizophrenic-like syndromes. The organic dementia reactions are considered more common by Howes[11] and other authors. These reactions show the typical signs and symptoms of organic brain disease and in particular it has been noted that these resemble general paresis. Psychotic depressions and manic excitements are rarer[1] and schizophrenic reactions are the least frequently seen. The cases of schizophrenic reaction with multiple sclerosis reported have most generally been of the paranoid type.[5,6,12,13] One case resembling catatonic schizophrenia has been reported[14] though later writers maintain that this probably should have been classified with the organic cases. The psychotic reactions seen with multiple sclerosis belong chiefly to the acute initial phase or exacerbations. The symptoms show quickly changing phases and appear or disappear comparatively suddenly with the tendency being toward regression. The psychotic symptoms are ordinarily correlated directly with the general neurological signs of multiple sclerosis. During periods of remission the psychotic symptoms are customarily absent but may reappear as the first clinical evidence of an exacerbation. The rare psychotic syndromes seen with multiple sclerosis are thought to depend on the primary disease and not to be purely coincidental because they fluctuate with the neurological signs and also because longitudinal studies of the patients do not ordinarily reveal the usual developmental patterns seen in the so called functional psychoses.

In the ten years, 1938-1948, 48 cases of multiple sclerosis were seen at the John Sealy Hospital. Of these, two cases showed concomitant psychotic symptoms. The following case summaries are designed to show the psychotic symptoms in these cases and

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their relationship to the neurological findings.

Case 1: Mr. V. I., a 40 year old lawyer of Italian descent was well until 1944. His normal personality was of the open, friendly, hypomanic type. In 1944 he first noticed a disturbance in his gait. A few months later he became very suspicious of his wife and was extremely critical and irritable. Frequently he would physically abuse his wife after accusing her of infidility. Gradually during the next year, the psychic symptoms and the gait disturbance subsided. He was not examined at the time so his exact neurological status is unknown. In 1947 the patient again exhibited neurological symptoms and again showed agitation, despondency and paranoid delusions in reference to his wife. When examined he evidenced the typical neurological findings of multiple sclerosis and a psychic picture suggestive of a paranoid reaction but complicated by periods of explosive crying and laughter. Histamine treatment was given with minimal neurological improvement. The mental picture, however, improved moderately for a short period of time. At the present time he is almost totally disabled and his mental state is such that his wife cannot live with him.

Case 2: Mrs. I. V., a 41 year old housewife, was in good health until 1939 and was described as being pleasant and sociable, having many friends and enjoying social activities. In 1939 shortly after the birth of her first child, she first noticed a "jerking" of her eyes accompanied by general fatigue and weakness. Her husband stated that at that time she became extremely jealous and suspicious and was convinced that he was unfaithful. Gradually over a period of a few months, the weakness and nystagmus disappeared as did the mental symptoms. In 1943, following the birth of a second child, she suffered a severe gait disturbance, her visual acuity decreased and she exhibited a marked delusional trend in reference to her family and husband. Again these symptoms gradually subsided spontaneously. She got along fairly well until the Spring of 1948 when her husband noticed her gait was grossly disturbed and that she was very suspicious and distrustful of him and of the neighbors. In April 1948, she attempted suicide by running the automobile engine in the closed garage. However, she was discovered in time and resuscitated. Her symptoms improved temporarily following this. In a few weeks, however, she again began to show marked weakness and gait disturbance. Also she became very suspicious and thought that the doctor was trying to influence her and her husband. On November 11, 1948 she took an overdose of amytal in a suicidal attempt and subsequently was hospitalized. Neurological examination revealed a bitemporal paling of the discs, nystagmus, positive Babinski bilaterally, generally hyperactive deep reflexes and cerebellar ataxia. Mental status showed a clinical picture highly suggestive of paranoid schizophrenia. Psychological testing showed mild organic deterioration on the Wechsler Bellevue, Shipley-Hartford, and Hunt tests. The Rorschach showed organic type reaction with paranoid schizophrenic features. Treatment consisted of intravenous histamine. Gradually both the neurological and the psychiatric symptoms subsided. To this date the patient has continued to be in a remission with apparent insight into her former delusional system.

Discussion

Cases of apparently clear-cut functional psychoses, may be primarily cases of multiple sclerosis. The two cases presented here with clinical syndromes resembling paranoid schizophrenia show the importance of recognizing the possible inter-relationship between psychotic symptoms and neurologic symptoms in the handling and treatment of psychoses with multiple sclerosis.

Summary

1) Psychotic reactions with multiple sclerosis are discussed from the standpoint of etiology, pathology, frequency and clinical types.

2) Two representative cases are presented to illustrate the importance of recognizing the disease entity, psychosis with multiple sclerosis.

REFERENCES

1 Brown, S. and Davis, T. K.: "Mental Symptoms of Multiple Sclerosis," *Arch. Neurol. and Psychiat.*, 7:629-634, 1922.
2 Sugar, C. and Nadell, R.: "Mental Symptoms in Multiple Sclerosis," *J. Nerv. and Ment. Dis.*, 98:267-280, (Sept.) 1943.
3 Borberg, N. C. and Zahle, V.: "On the Psychopathology of Disseminated Sclerosis," *Acta Psychiat et Neural.*, 21:75-89.
4 Cohen, L. H. and Gavigan, A. J.: "Psychiatric

Manifestations Associated with Disease of the Central Nervous System with Special Reference to Multiple Sclrosis," *J. Nerv. and Ment. Dis.*, 85:266-281, 1937.
5 Porterfield, T. G. and Rupp, C.: "Multiple Sclerosis," *Dis. of Nerv. Syst.*, 9:359-361, (Dec.) 1948.
6 Malone, W. H.: "Psychosis with Multiple Sclerosis," *Med. Bull. V. A.*, 14:113-117.
7 Cottrell, S. S. and Wilson, S. A. K.: "The Affective Symptomatology of Disseminated Sclerosis," *J. Neur. and Psychopath.*, 7:1, (July) 1926.
8 Langworthy, O. R., Kolb, L. C. and Androp, S.: "Disturbance of Behavior in Patients with Disseminated Sclerosis," *Am. J. Psychiatry*, 98: 243-249, (Sept.) 1941.
9 Jelliffe, S. E.: "Emotional and Psychological Factors in Multiple Sclerosis," *A. Res. Nerv. and Ment. Dis.*, 2:82-95, 1921.
10 Arbuse, O. T.: "Psychiatric Manifestations in Disseminated Sclerosis," *J. Mt. Sinai Hosp.*, N. Y., 5:403-410, 1938.
11 Howes, S. F. H.: "Psychoses with Multiple Sclerosis," *Boston Med. and Surg. J.*, 196:310-315, (Feb. 24) 1927.
12 Bassoe, P.: "Report of a Case of Multiple Sclerosis with a Delusion State and Terminal Delirium. Necropsy," *J. Nerv. and Ment. Dis*, 45:268-269, 1917.
13 Brown, S. and Davis, T. K.: "The Mental Symptoms of Multiple Sclerosis," *A. Res. Nerv. and Ment. Dis.*, 2:75-81, 1921.
14 Kaplan, J. F.: "Multiple Sclerosis with Psychical Signs. (Roussky Vrach. No. 35, 1903)," *J. Nerv. and Ment. Dis.*, 31:139-140, 1904 (Ravinsky).

Phenurone in Epilepsy

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Phenurone or AC-97 (phenacetylurea) is a white powder, not readily soluble in water, odorless and tasteless. It is administered in slotted tablet form, each tablet containing 500 mgm.

During the past six months I have used this preparation in the treatment of refractory cases of epilepsy. There are only 13 cases in this series and it is, therefore, not felt that statistical conclusions can be drawn. The purpose of the study was to investigate the therapeutic and toxic effects of the drug and the series was purposely held down so that the amount of work involved would not exceed the capacity of the nursing and laboratory staffs. Selection of cases was not difficult. The hospital staff was invited to transfer to the Neurological Service any epileptic whom they considered to be a problem, either from the standpoint of control of motor or psychomotor seizures.

Prior to administering the drug the following examinations were performed: X-ray of the skull, electro-encephalography, lumbar puncture, urinalysis, complete blood count, total blood serum protein, serum albumen, serum globulin, A-G ratio, quantitative serum bilirubin test, hippuric acid test, bromsulfalein test, blood sugar, and cephalin flocculation test. Urinalysis and complete blood count were repeated every seven days. The liver function tests were repeated every fourteen days. The electro-encephalogram was repeated in each instance, either after the termination of treatment or about four months after treatment was begun. Nurses were instructed to record in detail every complaint made by the patient, regardless of how minor it might appear to be. Although these patients received no different treatment than any other patients in the hospital, with the exception of phenurone, it is acknowledged that they knew they were receiving a new drug and this represents a serious flaw in the scientific control of the experiment. Unfortunately, personnel shortage did not permit the utilization of a control group using placebos of the same appearance as phenurone. Acknowledgement is made of the well known fact that psychological factors influence the frequency and perhaps the intensity of seizures, especially of the psychomotor variety.

In evaluating the therapeutic effect of the drug, comparison has been made between the number and type of seizures the patient experienced prior to and subsequent to the administration of phenurone. Special graphic

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From the Neurological Service, Veterans Administration Hospital, North Little Rock, Ark.

charts showing the patient's medication and seizure record were prepared for each day of the year in order to make certain that no errors crept into the findings. The initial dosage employed was 500 mgms. three times a day with meals. Slowly the medication formerly received was withdrawn and the number of tablets of phenurone increased. The maximum dosage in this series has been 500 mgms. five times per day. In a few patients it was possible to discontinue all other medication and to maintain the patient seizure-free on phenurone alone. In a number of instances, however, it was necessary to add other drugs such as diphenylhydantoin-sodium or phenobarbital or trimethadione or bromides. One patient required the synergistic effect of all these drugs, while another could not be controlled unless he received four of the five drugs, trimethadione being eliminated from the group. In no case was status epilepticus experienced during the slow substitution of phenurone for other drugs. The anticonvulsant effect of the drug *per se* cannot be determined from this experiment because not enough patients could be maintained seizure-free with just phenurone. Most of the patients required the addition of other anticonvulsives. The data does show, however, that patients who could not be controlled with any previous combination of anticonvulsants, could be very adequately controlled if phenurone were added to their previous medication. On two occasions we ran out of phenurone for a period of several days and during this time several patients, who had previously been seizure-free, had a series of convulsions. One patient, who had been seizure-free on 1500 mgms. of phenurone daily, received only 500 mgms. on October 16, 1948, because of a shortage of the medicine. On October 17 he was given dilantin 0.2 gms. and phenobarbital 0.066 gms. as replacement for the phenurone. He suffered seven grand mal seizures that day. Phenurone became available again on October 18 and this patient has been seizure-free for the past 102 days. Another patient, who had been maintained seizure-free on 2.5 gms. of phenurone daily, received only 2 gms. on November 28, 1948, because they were the last four tablets available. As replacement he was given dilantin 0.1 and phenobarbital 0.033 gms. on that day. The following day he was given 0.5 gms. dilantin and phenobarbital 0.133 gms. Despite this fact he had a grand mal seizure. Phenurone again became available on November 30 and the patient has remained seizure-free ever since. Another patient, who had been maintained on phenurone 1500 mgms., sodium bromide 2 gms., phenobarbital 0.133 gms. and dilantin 0.5 gms. daily, remained seizure-free until January 9, 1949, when we ran out of phenurone. On that day he suffered one psychomotor and two grand mal seizures. He has been seizure-free since. Another patient was maintained seizure-free on total daily medication consisting of phenurone 1.5 gms., phenobarbital 0.133 gms., and dilantin 0.3 gms. On September 28, 1948, only 0.5 gms. of phenurone was available for him and his dilantin was, therefore, increased to 0.4 gms. that day. He suffered five grand mal seizures. On January 10, 1949, phenurone was omitted and he had one psychomotor seizure.

It has been observed that the therapeutic efficacy of the drug is more dramatic in the treatment of psychomotor attacks than in grand or petit mal attacks. There appears to be no way of determining which patients with psychomotor attacks will improve with phenurone and thus far the trial and error method has been employed here. Some patients with personality disorders and psychomotor attacks are made worse by the drug and I have had to discontinue it on several occasions. Two patients became so disturbed and combative that it was deemed inadvisable to resume treatment. One patient became extremely disturbed but when the drug was withdrawn, reverted to his former tractable condition. After a lapse of three months the treatment was reinstituted, but after 21 days of phenurone he became hyperactive and on the 24th day the drug had to be withdrawn. On the other hand, three patients, who constituted very serious problems because of their violent psychomotor attacks, have shown remarkable improvement. Two of these patients, who were notorious for conduct-disorders, have become tractable, cooperative, pleasant, and soft spoken. The behavior of one is described by the Head Psychiatric Aide, who has known him for years, as follows: "Definitely improved; brighter; alert; sensible; personality has changed considerably." Another patient

was described by the same aide as follows: "He will never start a fight any more; when anyone gets on to him you can stop him by reasoning with him. We used to be unable to handle him. We don't have to restrain him anymore, he listens to us." These opinions are concurred in by those nurses who have had the opportunity to observe the patients for a long period of time. I have no opinion of the efficacy of the drug in petit mal seizures, since none of the patients exhibited such attacks.

Side Effects: Tingling of the hands and feet, palpitation of the heart, insomnia, drowsiness, skin rash, feeling of weakness, and headaches have not been seen in this series. Anorexia occurred in one case but responded to Vitamin B Complex capsules. A feeling of euphoria and marked exaggeration of personality disorders have been observed in five patients. Two were dropped from the study because they were too disturbed to make further administration of the drug advisable. One patient was tried with the drug on two separate occasions. On each occasion he complained of a "peculiar feeling" that he could not describe. A few days after this complaint the patient became extremely confused and disturbed and it was necessary to terminate the treatment. While complaining of the peculiar feeling it was obvious that the patient was euphoric and even childish. He spoke of feeling like a two year old. Another patient went through the same feeling of euphoria and said that he felt "just as good as if I were 5 or 6 years old." The following day he felt as good "as a two year old." On that day he became quite disturbed and treatment was terminated. Three months later phenurone was again given to this patient, but this time he tolerated the drug without exhibiting either euphoria or regression to childhood. This apparent regressive effect of the drug in these two instances was strikingly brought out by a third patient who formerly had been dull and unable to take part in most of the ward activities. The patient had been receiving dilantin 0.3, phenobarbital 0.133, and phenurone 2.5 gms. daily. Seven days later the dilantin was discontinued. On the 9th day the patient began to speak in a very childish manner, said that he felt exceptionally well and that his health was as good as that of a "three year old." The next day the patient was observed to be a little apprehensive. The following day the patient was seen in his room perfectly nude except for a diaper that he had fashioned for himself out of a towel. He was apprehensive about his newly discovered infancy, but at the same time felt rather happy and conducted himself like an infant. He asked one of the other patients to write a letter to his wife which is quoted here verbatim: "Dear Mamie, go to J. C. Penny and get me 6 dipers and get about 6 cloes pins. I can use them in the place of safety pins and get me about 4 four little shirts. Also get 3 pair of little white socks. Get 3 nipples large size. I do not know how fast I will grow. I am trying to check up on who made God and the world and what causes pepel to be cruel toward each other. Get 3 pair of little rompers. Love from your baby, Charlie." This remarkable regressed behavior continued for two days after the drug was withdrawn. It was considered that perhaps the drug might be employed as a tool for investigation of regressive states by the production of a toxic infantile level and the patient was, therefore, given the drug again about three months later. He has been receiving it now for 25 days, but he has not exhibited any regression this time. He is tolerating the drug well, is alert, well behaved, speaks sensibly, and is an excellent participant in ward activities. Apparently a patient may develop tolerance to the side effects if the drug is withdrawn for a while and then readministered.

Laboratory Studies: In this series no special effect upon the red blood count or hemoglobin was noted. The white blood count and neutrophils showed a general tendency toward approximately a 10 per cent drop for 7 to 14 days after the beginning of treatment with phenurone, but thereafter these findings approximated the pre-treatment findings. Routine urinalysis revealed no unusual changes. The hippuric acid test produced interesting results. In the first place, only a very small percentage of the patients excreted as much as 3 gms. of hippuric acid prior to treatment. The pre-treatment hippuric acid values varied from no excretion in one case to as low as 1.13 and to as high as 4.5. Following treatment these values almost invariably decreased sharply and in

most instances it ultimately appeared that the patient was not excreting hippuric acid but that the crystals were those of some other substance having a different microscopic appearance and a different melting point than that of hippuric acid. This matter is presently a subject of investigation in the laboratory of this hospital and will be reported by that department. The fasting blood glucose level decreased from 10 to 15 per cent in practically all instances, but the levels remained within the limits of normal. There appears to be a consistent change from normal values in the albumen and globulin content of the serum. Approximately 50 per cent of the patients had a depression of the serum albumen content but only in rare instances was the globulin fraction increased. The cephalin flocculation test in three patients showed from a trace to 1+ after treatment was begun. In the remainder of the patients it remained negative throughout. The bromsulfalein test was consistently within normal limits. The serum bilirubin level was increased slightly in four patients, but only after several months of medication. The spinal fluid showed no notable change.

Discussion

In a study as limited as this, one is obliged to treat the data not as scientific facts, but rather as impressions. Certain impressions are outstanding in this work. It would appear that epileptic patients, who have been refractory to treatment with other available anticonvulsants, have responded to treatment when phenurone was either added to the other in a synergistic manner or even in a few instances when it replaced other drugs. The therapeutic effect on grand mal seizures, striking though it has been in a few instances in this small series, has not been nearly as strikingly important as has been its effect on psychomotor attacks. Psychomotor epilepsy has always been difficult to treat and a drug that lends itself to the manipulation of the paroxysmal life of this type of patient is worthy of inclusion in the therapeutic armamentarium. Unfortunately, it has not been possible in this group of cases to predict which patient with personality disorders would improve and which would be made worse by the treatment. Therapeutic trial has been necessary here as in so many other fields of treatment. It was a simple matter to discontinue the treatment as the patient's disability became worse.

It has been disquieting at times when laboratory reports were received that pointed toward liver damage. None of the patients have shown any evidence of liver disease on clinical examination. Since the liver has so many functions, both known and unknown, for which reliable tests are not available, it is, of course, possible that other functions are damaged than those in which we obtained abnormal test results. The most unusual finding is the fact that these patients apparently do not conjugate hippuric acid. There has been some indication that liver function tests tend to show abnormalities immediately after treatment, but as time goes on the results tend to revert toward normal. This has been true of all the tests employed here except, as mentioned above, the test for hippuric acid conjugation. It is certain that more tests must be done on more patients before the possible danger of liver disease can be dismissed.

Conclusions

1) Phenurone has been found to be of assistance in the control of grand mal and especially of psychomotor epileptic attacks.

2) Peculiar psychologic regression has been observed in a few instances.

3) The results of various laboratory tests has been discussed.

4) Further liver toxicity studies should be done.

Author's Note: The phenurone used in this research was supplied through the courtesy of the Abbott Research Laboratories, North Chicago, Ill.

Neurological Clinical Pathological Conference

OF THE CINCINNATI GENERAL HOSPITAL

CHARLES D. ARING, M.D., Editor

CASE NO. 159220

Presentation

A 55-year-old white shipping clerk entered the hospital on August 6, 1948, complaining of headache of several weeks duration. The patient's sensorium was clouded, but the history was reasonably consistent. He had been well until a month before entry when on a dentist's recommendation he had nine teeth extracted. Shortly afterward, on arising in the morning, he noted weakness, dizziness, cold perspiration and shakiness. As these symptoms became worse he would on occasion have vomiting spells without preceding nausea. He found that if he returned to bed for about five minutes he would feel better on arising the second time and would improve as he remained up longer. At about the same time he noted bilateral frontal headache which was quite intense and radiated sharply to the occipital region. This was precipitated by motion of the head or crying (one attack was initiated by the examiner with Valsalva's experiment) and persisted only for a few seconds. Although the symptoms had become less severe they had all continued. There was no anorexia, but the tendency to vomit had caused the patient to limit his food intake and there had accordingly been an undetermined amount of weight loss. One examiner stated that there had been recent weakness in the hands and a loss of hearing in the right ear. He had remained in bed voluntarily and was under the care of his own doctor.

In 1941 the patient had been treated in the Eye Clinic where a diagnosis of old and stationary chorioretinitis was made and glasses were prescribed. There had been a chronic "cigarette cough" which was mildly productive but no pleuritic pain or hemoptysis were recorded.

The patient was a thin, but well developed white male, who lay flat in bed complaining of weakness and headache on motion. In the skin of the back many slightly raised, angioma-like lesions were noted. The pupils were equal, slightly irregular and showed slight hippus; reaction was satisfactory. There was horizontal nystagmus. Fundiscopic examination revealed evidence of old disseminated retinitis with retinitis proliferans, but no recent activity. The discs were elevated several diopters and veins were engorged and tortuous. Another examiner found the right disc normal, but slight elevation and haziness temporally on the left. Nystagmus was increased with cold water in the right eye when either sitting or reclining. A similar test on the left gave equivocal results. There were neither vertigo nor nausea. There was slight flattening of the right side of the face, but the tongue protruded in the midline. Temperature was 98.4 degrees F. The lungs were clear; respirations were 20 per minute. The heart was normal, pulse 72 per minute; blood pressure 138/70. The abdomen was normal. Outstretched arms were maintained well with slight drift to the left. The Holmes' rebound sign was less well shown on the left. Finger to nose test was done with greater accuracy with the right hand. Hand grips were normal. Abdominal skin reflexes were symmetrical, but in the upper quadrants they were exhaustible. Deep reflexes were variable in the lower extremities. Some examiners found them present, others failed to elicit them. In general, however, they seemed to be of greater intensity on the right. Plantar responses were flexor. The gait was unsteady and wide based. The Romberg sign was positive with falling to the left. Later the test became negative.

Laboratory Data: Red cells of the blood numbered 5.8 million with 15 gm. per cent of hemoglobin. The white cells numbered 11,100 with 66 per cent neutrophiles. The urine contained acetone but was otherwise normal. The stool was normal. Kahn test on the blood was negative. The blood urea nitrogen was normal. An electrocardiogram was normal. In three gastric washings a single acid fast organism was found. Several liver function tests were normal except the cephalin floc-

culation test which was two plus in 48 hours.

A lumbar puncture produced clear fluid with an initial pressure of 220 mm. and a final pressure of 90 mm. after the removal of 15 cc. The fluid contained five lymphocytes and eight red cells per c mm. A Pandy test was four plus and the total protein 125 mg. per cent Chlorides were 638 mg. per cent. The gold sol curve was normal.

Films of the skull showed no boney abnormality. The pineal which was well visualized was not displaced. A film of the chest showed a normal heart outline and a clear left lung field. In the right first interspace area laterally there was a single patch of homogeneous infiltrate measuring 3 cm. in diameter. The lesion showed questionable rarefaction in its center. The remainder of the right lung field was clear. A barium enema was unrevealing.

During the first few days in the hospital the patient's condition improved and his mental state cleared. He remained afebrile throughout. A bronchoscopy gave entirely negative results. Later the episodes of severe headache became more frequent and he vomited repeatedly. On the twelfth hospital day he became stuporous and vomiting became projectile in character. Two days later he lapsed into coma and began to froth at the mouth. Examination of the chest at this time revealed no evidence of pulmonary edema. His respirations suddenly ceased, although heart sounds continued for about twenty minutes thereafter. A needle inserted into the spinal canal permitted clear fluid to spurt out. The patient was declared dead on August 20, 1948.

Differential Diagnosis

Dr. Charles D. Aring: In neurological diagnosis it is sometimes helpful to concentrate on the very first symptom of the illness under scrutiny. If this technique be followed here, the consideration is about a 55-year-old man who quickly got out of tune with his environment. Specifically, he could not arise from the recumbent position without experiencing a crisis of sorts, manifested by pre-syncopal symptoms. Reclining prolongedly as at night, resulted in an adaptation of the intracranial dynamics which when disturbed suddenly, as occurs on sitting up, did not readapt as do yours and mine. As we read the first few lines of the story we suspect that we have to deal with intracranial dynamics that were precariously balanced. This opinion is strengthened by reading the remainder of the first paragraph where there are described techniques of suddenly and temporarily increasing venous pressure, innocuous to the healthy person, but disturbing to our patient. It is clear that a quickly decreasing intracranial pressure or its rapid increase were both effective in disordering internal adaptation. We needn't linger over the disturbed physiological mechanisms in this patient; brief mention will be made of them during my attempt at establishing localization and the etiological diagnosis.

Determining the anatomical abnormalities in the central nervous system is the more difficult part of our problem, to localize the disease perhaps will be more onerous than to tell what it was. First we have to contend with what may have been disagreement among physicians. While it is conceivable that optic discs choked several diopters might recede to relative normality, it isn't a likely sequence in consideration of the outcome of the case. I am at some advantage over the doctor who was on the spot, now being in possession of all the information that was gleaned by the various workers in the vineyard; by the same token I have more red herrings to dispose of. However, there are enough signs of increased pressure to allow me to ignore any controversy about the optic discs.

In localization, I do have to make some choice between certain signs which implicate first one area of the nervous system then another. For example, lack of checking was observed in the right upper extremity more than in the left, although finger-nose-finger testing was more accurate on the right. This is an apparent contradiction. The gait, seemingly typical of cerebellar disorder, might be contradicted because the patient at one time was able to maintain himself steadily upright, heels and toes together and eyes closed. However, there is enough the matter to tell me that something is amiss in the cerebellum.

The precariousness of homeostatic balance is suggestive of a posterior fossa lesion. There is relatively less room for expansion below than above the tentorium cerebelli. Someone

has said, perhaps facetiously, the medulla is the place where we live. By this I suppose is meant that not only is nervous function less exclusively localized in this relatively small area, but such vital functions as respiration, heart action, and the reflex control of the fauces is mediated from there.

Nystagmus, in the absence of such drugs as produce it—particularly the barbiturates—which responds variously to caloric tests done first on one side and then on the other implicates vestibular mechanisms. The gait, evaluation of which is always highly important in neurology, indicates cerebellar dysfunction. This cannot be gainsaid by any of the other signs that were found. The occasional failing of the deep reflexes in the lower extremities is well-known in cerebellar neoplasm and is thought to be a neighborhood effect, perhaps produced by dysfunction of those structures in the pons intimately connected with the cerebellum.

Passing on to etiological consideration, I'm going along with Tocqueville who wrote so profoundly on democracy in America more than a century ago. It was one of his many keen observations that democratic man likes abstract verbiage; it is his form of nobility. Some may feel this beside the point in this conference, but I am just as certain that it is not. To point up the argument, let us take a sentence in the final paragraph: "A bronchoscopy gave entirely negative results." Why not simply, "A bronchoscopic examination was normal?" What is an "entirely negative result?" What thought is substituted for by this verbiage? Admittedly I am not engaging strictly in clinical diagnosis, nor am I at the bedside; I believe that a part of the technique of the clinical pathological conference is an exercise in human relations and understanding, which after all is medicine.

Until I read the sentence which I have plucked out of context, I wasn't too intent upon the lungs. I have no idea how a bronchoscopic examination came about unless it followed a roentgen plate of the chest taken routinely. Perhaps the cough was more impressively heard than read about. The chest x-ray film revealed something described as a single patch of homogeneous infiltrate. This is not the characteristic infiltrate; usually infiltrates are not so restricted and homogeneous, unless tumorous processes be included under the term infiltration which I prefer not to do. Perhaps I am in hot pursuit of one of the red herrings in the case, and I am quite clear that my technique of analysis is not that used at the bedside.

I suspect, Sherlock Holmes-wise or unwisely, that we are dealing with a metastatic tumor to the cerebellum from the right lung. Maybe the angioma-like lesions of the skin should be more carefully weighed in etiological diagnosis. If he had had similar lesions in his brain, I would expect manifestation thereof before the age of 55 years; also, a stroke-like onset might be expected if the angioma had been dormant up to then. There are no signs of infection to divert me from the idea that the metastasis is other than neoplastic. The cerebrospinal fluid chloride of 638 mg. is not, as is usual, an accompaniment of a febrile disease, and there were no meningeal signs. I attribute this finding to the loss of chloride by vomiting, if the tap was done during or after a bout of it, or, as that single organism of acid-fast propensities, to the vagaries of a laboratory.

A few points remain to be mentioned. I am not inclined to associate neurological lesions and dental troubles, chiefly because I myself have rarely, if ever, had to deal with the combination. I don't know enough about chorioretinitis to do more than mention that it occurs; I don't fit it with the disease that caused death. I hope I may attribute the temporary improvement that occurred in the general condition of the patient to nursing. Evidently the cerebrospinal fluid that spurted out near the time of death landed somewhere other than in the laboratory; it would be helpful to have had an analysis of it. The "declaration of death" in the last sentence reminds me that Jacques Barzun had pointed to a very real affliction of the contemporary mind—the gradual detachment of meaning from language, possibly the obsolescence of the written word as a means of charting experience and analyzing thought.

My diagnosis, arrived at somewhat unorthodoxically, is metastatic tumor of the cerebellum from the right lung. I haven't much preference for localization in the left cerebellar hemisphere over the right. Since metastatic brain tumors are as often multiple as not, perhaps there may be other sites of implantation in the central nervous system,

even though I have not found signs of their localization.

Dr. Henry Felson: Were sputum smears studied for tumor cells?

Dr. Richard Westcott: No, this wasn't done. Only studies for tubercle bacilli were carried out.

Dr. Edward A. Gall: What was the roentgen diagnosis?

Dr. Benjamin Felson: We thought, at first, that the lesion was tuberculous. Later we considered primary carcinoma a more likely probability.

Dr. William F. Ashe: Do you think the nature of the terminal episode was a little unusual?

Dr. Aring: No, this is not an uncommon happening with lesions in the posterior fossa.

Dr. Stanley E. Dorst: Can you rule out the possibility of brain abscess?

Dr. Aring: One sees brain abscesses without fever or leukocytosis but I would expect to see more evidence of activity in the cerebro-spinal fluid and more disturbance of vital signs.

Dr. Robert J. Ritterhoff: Do you think he has a single lesion in the brain?

Dr. Aring: I find evidence of one only although metastases are usually multiple.

Dr. Frank R. Dutra: Manipulation in the mouth particularly tooth extraction is a notorious cause of lung abscess. It is conceivable that the extraction of teeth resulted in the pulmonary lesion which, it seems to me, could be an abscess. Under such circumstance a metastatic brain abscess might well explain the circumstances here.

Dr. Robert Brill: Isn't it dangerous to do a lumbar puncture with a lesion of the posterior fossa?

Dr. Aring: This patient suffered no ill effects, in fact, he improved after it. I agree, however, that it is not a wise procedure particularly if the large-bore needle so commonly utilized is employed. There is seepage of fluid after the tap through the defect produced by the needle and it has been shown experimentally that this may continue for as long as a week after puncture. I believe that if a small-gauge needle is used judiciously the danger is lessened.

Pathological Discussion

Dr. Robert J. Ritterhoff: In the base of the upper lobe of the right lung and deep within the substance of the left lobe of the cerebellum there were found tumor nodules, each approximately three centimeters in diameter. That in the lung abutted upon the interlobar fissure and was associated with focal pleural adhesions and pleural puckering. Neoplastic involvement of the associated lymph nodes was not grossly observed.

The brain weighed 1425 grams and the left cerebellar hemisphere was larger than normal. Despite the clinical evidence of brain edema there were found only slight dilatation of the ventricular system, little flattening of the cerebral convolutions, slight cerebellar herniation and slight nicking of the left uncal gyrus. No hemorrhages were observed in the brain stem.

Microscopically, the brain and lung neoplasms were alike, being composed of cords, sheets and clumps of closely applied large, oval and polygonal cells showing all the evidences of cellular immaturity. Keratinization or gland formation were not seen and there were extensive foci of tumor necrosis. Small clumps of neoplastic cells were found in blood vessels.

Morphologically, the necrosis as seen in relation to the primary lung tumor was not suggestive of tuberculosis, nor were acid fast bacilli demonstrable with an appropriate stain. It is possible, though, that there was an active tuberculous lesion deep within the neoplasm of the lung, as the microscopic examination was not representative of the entire tumor nodule. Small foci of inactive tuberculosis can readily become re-activated by a destructive process such as a carcinoma. The cerebellar metastasis, grossly fairly sharply demarcated, presented microscopically, finger-like extensions into the surrounding white substance. Despite extensive necrosis, vascular emboli and rapidity of growth there were no evidences of past or recent bleeding into the tumor mass. Perifocal reactive changes of gliosis, macrophagic infiltration and vascularization were only of moderate intensity.

On the basis of autopsy studies it appears that the incidence of metastic brain tumors is somewhere between ten and twenty per cent of all tumors of the brain. This is considerably above the frequency as established in neurosurgical clinics. The four most fre-

quent sources of intracranial metastases are the lung, breast, gastrointestinal tract and kidney. The majority, thirty to fifty per cent, arise from the lung. Most metastases, being blood borne, tend to be multiple and widely scattered throughout the brain. Yet in one series of 34 cases studied at autopsy[1] there were sixteen in which the cerebellum was involved alone and in five of these cases there was only a single metastasis in the cerebellum. In another series,[2] metastasis occurred in the cerebellum only in fourteen out of 68 cases. The present case is unusual in that the primary growth is small and presumably an early one and has but a single metastasis. Ordinarily, metastases are seen with more bulky primary growths with localizing clinical signs, yet about once a year a similar case is seen, a small bronchogenous carcinoma with predominant clinical evidences of brain disease due to metastatic carcinoma.

The problem is one of early diagnosis of bronchogenous carcinoma. In cases such as this, however, diagnosis would be dependent upon a fortuitous chest x-ray film as there were no clinical evidences of pulmonary disease. Conversely, because of the high incidence of intracranial metastatic neoplasm from a primary bronchogenous carcinoma, it becomes mandatory that individuals with evidence of brain tumor have a roentgenogram of the thorax. It does not follow that in the face of an isolated unclassified lung lesion or a small proven bronchogenous carcinoma that the brain lesion is necessarily a metastatic carcinoma or that the lesion in the brain is multiple. It may be single, particularly if the signs point to cerebellar involvement, or the metastasis may be infectious, an abscess, for there is often suppuration in relation to the primary pulmonary neoplasm. Finally, the brain lesion may be independent, single, and surgically removable. It may then be that in selected cases it would be well to consider each case upon its own merits rather than to forego operative intervention on the basis of statistics. Present surgical methods may permit the salvage of some patients.

Clinical Diagnosis

Bronchogenic carcinoma with metastasis to the cerebellum.

Dr. Aring's Diagnosis

Primary carcinoma of the right lung with metastasis to the cerebellum.

Anatomical Diagnosis

Bronchogenous carcinoma, right upper lobe, with a metastasis to the left cerebellar hemisphere.

Chronic pulmonary emphysema.

Acute passive hyperemia of the viscera.

Dr. Eugene B. Ferris: Is the finding of one acid fast bacillus in three gastric washings a normal occurrence?

Dr. Ritterhoff: I don't see how it can be ignored. It could very well be a virulent organism. Whether or not it indicated pulmonary tuberculosis in the patient would be a problem for the clinician to solve after considering all factors.

Dr. John C. Tinsley, Jr.: We have been inclined to ignore the reports of occasional or isolated acid fast organisms in gastric washings.

Dr. Gall: That seems to me an illogical thing to do. One might just as well instruct technicians to report as negative all smears with fewer than five organisms. Minimal findings may sometimes represent the only lead one has toward a correct diagnosis.

Dr. Philip Wasserman: I would think that equivocal reports of this nature could well be checked by culture or guinea pig inoculation.

Dr. Ritterhoff: Of course, one can and should use such methods. But even if the organism does prove to be the tubercle bacillus, it is still the responsibility of the clinician to establish its source, and not whimsically to attribute a discordant finding to a laboratory error. It may have come from this patient; the lesion was not searched pathologically in its entirety. Medlar has observed that virulent tubercle bacilli may be recovered sporadically by gastric lavage from individuals in apparent good health.

Dr. Marion A. Blankenhorn: How often do you see a metastatic brain abscess from a primary lung abscess as small as this lesion? It is my impression that when this sequence occurs the pulmonary lesion is invariably a large and extensive lesion.

Dr. Gall: I am sure I have seen brain

abscess associated with no larger an abscess than the lesion here. The metastasis is an index of blood vessel involvement and not the size of the primary site

Dr. Blankenhorn: But the larger the abscess, the greater likelihood of blood vessel involvement.

Dr. Gall: That is certainly true.

Book Review

AN INTRODUCTION TO CLINICAL PSYCHOLOGY. Edited by L. A. Stoddard and Irwin A. Berg. Published by the Ronald Press Co., New York, 1948. Price $5.00. 595 Pages.

Twenty-two separate articles divided into five sections make up the substance of this volume intended, in the words of the editors, ". . . . to describe eclectically at the introductory level what clinical psychologists do." This aim is pursued in these sections entitled "Introduction," "Clinical Problems," "Clinical Methods," "Psychotherapy" and "Professional Relationships." The articles written for the great part by psychologists cover the entire range of mental ills from mental deficiency through the psychoses. This coverage includes diagnosis, psychodynamics and psychopathology, and all the various forms of treatment. This is done according to the editors and the individual authors to give clinical psychologists a background to aid in their approach to clinical problems. The feeling is that at least a little knowledge of the entire field is necessary for the clinical psychologists to be able to handle patients and to coordinate their activities with the other workers in the field. Of course some of the articles are more instructive than the others. The ones on client-centered therapy and projective techniques are good, for example. But aside from an evident leaning toward the "nondirective" and "analytical" approaches this book gives a fair, though necessarily superficial, presentation. Numerous case studies are included to illustrate the various points.

Rather than serving as the definitive work for the study of clinical psychology, this book might better function as a propagandizing agent in securing adherents for this discipline from all those now engaged in or contemplating entering the study of mental illness. As a preliminary survey and the starting point for further study, this book is more than adequate.

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